Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Inquiry Regarding Carrier Current	)	ET Docket No. 03-104
Systems, including Broadband over Power	)	
Line Systems	)	
	)	

I wish to discuss several aspects of the Notice of Inquiry which I have not seen articulated elsewhere, and which I feel the Commission must investigate in order to thoroughly evaluate Broadband over Power Line systems (BPL).

Suitability of the frequency region for the proposed service.
First, is the question of the inherent suitability of the frequency region(s) proposed for BPL operation. It is illustrative to consider the success of two approaches to a common problem in the past. The difference in the success of these two approaches hinges primarily on the appropriateness of the frequency region chosen for the service. This choice principally affects the propagation of signals. In one instance, the choice of frequency region was inappropriate and resulted in confusion and problems that persist until today. In the second instance, the choice was matched to the needs of the service and its appropriate regulation, and this choice appears to be growing healthily.

The Commission has recognized the need for average citizens to communicate via radio, but without the technical sophistication of professional radio users. The first response to this was the creation of the Citizens' Band (CB). This service was created to be a low-power, limited-distance communication service, but in a spectrum region (27 MHz), where worldwide communication was routine. The attempted solution to this incommensurability was to make it illegal for CB users to communicate over long distances. Of course, this service is famously unsuccessful in meeting its original goals, in large measure because its frequency region so easily facilitates other types of behavior. It has in fact given rise to other kinds of unlawful radio use ("freebanding"), none of which is easily controlled by contemporary enforcement.

This service should be contrasted with the results of a newer, much more successful service, which operates in an appropriate region of the spectrum—the Family Radio Service (FRS). Operating above 450 MHz, FRS has the same limited-distance, casual user orientation that CB was intended to have. But because propagation is "line of site" in this part of the spectrum, even with very high powers, users are constrained, not merely encouraged, to operate in the way that the service was intended. Thus, the assigned spectrum is inherently compatible with the intended use, and effective co-existence with other services is virtually assured.

I urge the Commission, and the Commissioners, to study this history and consider carefully how a mis-match in mission and frequency region can create either a rousing success or a debacle. It looks to me that the proposed region for BPL (2-80 MHz) may present more mis-match than match for the intended mission.

Other interested parties may assert that the frequency region proposed for BPL is *well* matched to its use, but this is only true with regard to transmitting signals. The Commission must also, and

more importantly, be concerned with the co-existence of other services and the reception of the signals by all possible, not just the intentional, receivers of these signals.

Modeling of the proposed BPL service

The Notice of Inquiry asks about models for the BPL approach. The Commission should consider very carefully whether proposed models are applicable to the prediction of interference with other services. Typically, models concern the prediction of coverage of a proposed service. Those models of interference that are available will consider interference at some stipulated field strength, but will not consider low-signal level interference.

There are many services in the 2-80 MHz region, some of which depend on being able to discern the least-possible amount of signal. BPL seems likely to render this kind of use impossible. The Commission should consider carefully whether a "model" of interference is adequate to predict the effects of BPL on, for example, a search and rescue operation, or providing emergency communications to a disaster area. In these cases, an absolute minimum of interference must be present, and purposeful wideband radiators, such as BPL, will disrupt these missions.

Consider non-U.S. reports and experiments with BPL or similar services

Though there are always differences between US radio practice and that of other countries, there are international studies of the "friendliness" of BPL to other services that the Commission should consider. It would be easy to dismiss these studies based on the differences between their particular implementation and the proposed US implementation of BPL or BPL-like services. The interference and propagation information generated by these studies, however, is likely applicable regardless of the particular implementation. Thus, please factor these findings into your consideration along with any specific studies conducted by and/or for the Commission.

Non-comparability to other "wideband" communication services or modes

It may be tempting to consider that BPL is just another wideband mode, like "Wi-Fi" or 802.11a. This equation, however, confuses bandwidth with frequency region (just like the difference between CB and FRS described earlier). BPL at 2-80 MHz is essentially a "baseband" method, and so has the same carrier frequency (approximately) as its bandwidth. However, an 80-MHz band at an 80-MHz center frequency is a very different situation than an 80-MHz band at 2400-MHz center frequency—most especially for the current discussion in terms of its potential to interfere with other services.

Conclusion

As will be obvious by now, my concern about BPL is its potential for destructive interference with other services—in the case of my own self-interest, the Amateur service. Amateur interests include the ability to detect extremely weak signals in the frequency region in which BPL might be deployed, and the achievement of this kind of operation enables some of the key Amateur activities that justify the establishment and continuance of the service from a governmental viewpoint. The Commission should carefully study the disruption to this and similar services.

I also urge the Commission to invite the American Radio Relay League (ARRL) to be part of trials of BPL, to help establish the ability or inability of BPL to operate without interference to other services. The ARRL is a venerable institution including as members and employees some of the world's most knowledgeable people on the subject of radio propagation, interference and compatibility, and so forth. Though the ARRL would have a purpose in its own interest in participating, so will any other participant, and the Commission will have to factor that into its evaluation no matter what. Purposefully omitting ARRL from further inquiry into BPL would seriously undermine the objectivity of that study.

Finally, I want to be clear that I support the basic motive that I believe drives the Commission in this Notice of Inquiry—to provide more-universal communication in the US with reduced costs

and complexity. Nevertheless, there are complex phenomena at work here, and I trust that the Commission will grapple with them thoroughly and fairly to develop a decision on further regulation of BPL which will minimize its adverse impact on other services.

Respectfully submitted,

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